

THE PREVALENCE OF
RHEUMATIC HEART DISEASE
IN A RURAL POPULATION
CATERED BY RURAL HEALTH CUM
TRAINING CENTRE, MANDUR
AND ADMINISTRATION OF
SECONDARY PROPHYLAXIS

DISSERTATION SUBMITTED FOR THE
D P H
(DIPLOMA IN PUBLIC HEALTH)
EXAMINATION

GOA UNIVERSITY
JANUARY 1998

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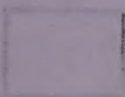
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INTRODUCTION

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INTRODUCTION

Rheumatic fever, a clinical syndrome, is an acute inflammatory disease, the chief manifestations of which are arthritis, carditis, subcutaneous nodules, erythema marginatum and chorea. Although it is not a communicable disease it results from a communicable disease i.e. streptococcal pharyngitis. The importance of this disease centres around the fact that it produces heart disease which can be fatal during the acute stage or can lead to crippling chronic heart disease. "Rheumatic fever licks the joints and bites the heart".

The most striking observation regarding rheumatic fever in the last few decades has been the decrease in its incidence in the developed countries and its persistence in the developing countries. Rheumatic fever and rheumatic heart disease were widespread in Europe at the turn of the century, then began to decline. The best information came from Denmark, where rheumatic fever has been notifiable since 1878. Between 1862 and 1900, the annual incidence of rheumatic fever was over 200 per lakh population, but by 1948 it had fallen to about 55 per lakh. The decline subsequently accelerated and by 1962, the incidence was just over 10 per lakh population. Today the mean annual incidence of rheumatic fever in the affluent countries is less than 5 per lakh and is still falling (TRS No. 764).

The first of the two main parts of the report is a description of the work done during the year. This is followed by a discussion of the results of the work and the conclusions drawn from them. The second part of the report is a list of references.

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1981-1982
1981-1982

By the late 1940s, it was evident that rheumatic fever was a significant problem in tropical countries, annual incidence rates ranging from 27 to 100 per 1,00,000 have been recorded in some Eastern Mediterranean Countries (H.A. Majeed et al; unpublished data). Similar rates have been reported from countries in the Western Pacific; for example the annual incidence in Maoris under 20 years of age in Northland, New Zealand is 116/1,00,000. Among socially and economically disadvantaged populations with overcrowded living conditions in developing countries, the incidence is likely to approach 100/1,00,000 in children. The prevalence of rheumatic heart disease among school children in the affluent countries has been reported as 0.6/1000 in U.S.A. and 0.7/1000 in Japan. The decrease in rheumatic fever in these countries started long before sulfonamide and penicillin were used. This decrease has been attributed to improved socio-economic conditions and general living standards. Rheumatic fever/rheumatic heart disease is the most important cause of cardiac death below the age of 45 years in Mongolia, the Phillipines, Indonesia, the Pacific islands, India, Burma, Sri Lanka, Pakistan and the Middle East. The available information suggests that incidence rates of rheumatic fever approaching 100/1 lakh in younger age groups are to be expected in most developing countries. However, even in societies with a high average income, there remain islands of

poverty where a relatively high incidence of rheumatic fever may persist, rendering the 'eradication of rheumatic fever an unfulfilled hope'. (Markowitz 1970).

Historical data: Yearly 30-40% of the patients seen in cardiac clinics in major hospitals are cases of rheumatic fever/ rheumatic heart disease (Padmavati 1985). The British military physician in India before the World War II mostly remarked on the rarity of rheumatic heart disease and rheumatic fever in the wards and at autopsies although differences of opinion existed. In 1938, however, Stott the first person to study the problem of rheumatic heart disease in India seriously observed that the extent of the problem was identical in India and London. From 1935 to 1949 reports in Indian Journal pointed to the high prevalence of rheumatic heart disease in all states of the Union. It is possible that urban migration around this period with the creation of slums, overcrowding and cross-infection contributed to this situation.

The link between Group A B-haemolytic streptococcal upper respiratory infection and the subsequent development of rheumatic fever is well established. The disease is typically associated with poverty and especially with poor housing and overcrowding, which favour the spread of streptococcal upper respiratory infection.

Earlier rheumatic fever was considered to be the disease of temperate climates, however a number of reports have shown that it is present rather in high frequency in tropical countries (WHO chronicle 1980). As Shaper (1972) summarises the problem 'tropical' in this context pertains less to climate per se than the ecology of rheumatic fever including poverty, overcrowding and grossly inadequate health services.

The only way to achieve a real breakthrough is to combat the root cause of the disease in the population, a matter for public health action.

Although attacks of rheumatic fever can be treated even the best treatment has no effect on the subsequent development and course of rheumatic heart disease. The prevention of rheumatic fever is the only solution. The evidence is very strong that adequate treatment of streptococcal throat infection does prevent the occurrence of rheumatic fever. Widespread improvements in socio-economic conditions will eventually help to diminish poverty related disease i.e. rheumatic fever/rheumatic heart disease, but few developing countries can expect the incidence to decline significantly for this reason.

Goa and its surrounding areas on the West Coast of India have a tropical climate and a certain degree of socio-economic

development. In 1980 Souza et al, studying 14,592 children of school-going age found the prevalence of rheumatic heart disease in Goa to be 1.3/1000.

With much research done on rheumatic fever and its relationship to rheumatic heart disease, it still remains as serious a public health problem. In this country, it is important to unravel the social factors and differences in the health outcome responsible for rheumatic fever and rheumatic heart disease in various social settings. Since socio-economic factors and overcrowding play an important role and are widely responsible for the magnitude of the problem, this study was thought to be essential to add to the current knowledge of the socio-economic factors in rheumatic fever/rheumatic heart disease in a rural area and compare with other Indian states.

The present study is conducted with the aim of studying the prevalence of rheumatic fever and rheumatic heart disease in the area catered to by the Rural Health cum Training Centre, Mandur, and its five sub-centres and administer secondary prophylaxis. This will help in implementing an effective prevention programme in the near future.

AIMS & OBJECTIVES

AIMS AND OBJECTIVES

- 2.1 To study the prevalence of rheumatic fever and rheumatic heart disease in a rural population.
- 2.2 To administer secondary penicillin prophylaxis.
- 2.3 To study the social factors associated with rheumatic heart disease.
- 2.4 To suggest preventive and control measures to the population so that rheumatic fever/rheumatic heart disease will cease to be a public health problem.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

3.1 History

Though acute rheumatic fever was apparently known to the ancient Greeks, it was many centuries before it became clearly separated from other forms of rheumatism. Sydenham whose name is associated with chorea, also described the pattern of the migratory arthritis, but the association of the two manifestations were first recognised by Stoll a century later in 1780. Shortly thereafter, Pitcain, Jenner and Wells emphasized that rheumatic fever can damage the heart.

Another century passed before the French paediatrician, Roger recognised the relation of the various manifestations of the disease and Cheadle in 1889 printed out the variations in the clinical patterns at different ages as well as the tendency of the disease to occur in families. Although earlier observers had described submiliary nodular reactions in the myocardium, Aschoff in 1904 is generally credited with stressing their specificity. The criteria introduced by Jones in 1944 brought order into the clinical classification.

The association of acute rheumatic fever with sore throat and the concept of a latent period were recognised during the 19th century, particularly by Haygarth, Froiler and Haig Brown. The relation of scarlet fever and streptococcal tonsillitis to

acute rheumatic fever was described by Schlesinger, Collis and Coburn in 1930 and 1931⁽⁷³⁾, the description of the Anti-streptolysin - O - test by Todd 1932, has permitted correlation of serologic with clinical, epidemiologic and bacteriologic findings.

Treatment of acute streptococcal infection with penicillin was first shown to reduce recurrent attacks of rheumatic fever by Massel and colleagues in 1951 and to prevent the initial attacks by Rammelkamp and coworkers in 1952.

Dillon HL Jr. has proved a disturbing trend of increasing numbers of clinical relapses or recurrent infections has with penicillin, according to him, alternative antibiotics such as oral cephalosporins may now be superior to oral penicillin in terms of lessening the risk of relapse.

3.2 Rheumatic fever:

Rheumatic fever is a multisystem disease the acute manifestations of which may include arthritis and fever, carditis, emotional liability and choreiform movements and less frequently, a characteristic rash (erythema marginatum) and subcutaneous nodules. Rheumatic fever may properly be considered as a complication of streptococcal infection of the upper respiratory tract which includes pharyngitis, tonsillitis, otitis media and scarlet fever.

August 1960

It is a disease of the blood and is characterized by a low count of red blood cells and a high count of white blood cells. It is a disease of the blood and is characterized by a low count of red blood cells and a high count of white blood cells.

The incidence of streptococcal infection obviously varies a great deal, depending on geography, age group, economic status. The incidence of rheumatic fever after known streptococcal infection has been estimated to be about 3% in epidemic situations and 0.3% in non-epidemic situations.

3.3 Prevalence:

Population surveys indicate prevalence rate of rheumatic heart disease varying from 0.15% - 0.31% in different parts of the country (WHO 1980) except in cold hilly areas where it is higher (3.96%) as found by Agarwal (1975) ⁽³¹⁾.

Overall prevalence of rheumatic Heart disease was 0.135% in school children in a rural community of a hill region of Nepal and no case of acute rheumatic fever was identified ⁽⁷¹⁾.

In a study conducted by Kassam AS and Zaher SR in Ethiopia out of 816 children with history of streptococcal infection 24 developed acute rheumatic fever, 44 had chronic rheumatic heart disease ⁽⁷⁸⁾.

A WHO programme for screening of school children (1986-90) gave a prevalence of 0.22% recently identified or already known cases ⁽⁸⁵⁾.

In a study conducted in rural Australian aboriginal community by Brenann RE and Patel MS the point prevalence for

The purpose of this study is to determine the effect of the amount of time spent in the laboratory on the amount of time spent in the field. The results of this study will be used to determine the effect of the amount of time spent in the laboratory on the amount of time spent in the field.

References

1. Smith, J. D. (1998). The effect of the amount of time spent in the laboratory on the amount of time spent in the field. *Journal of the American Psychological Association*, 103(4), 612-618.

2. Jones, K. L. (2001). The effect of the amount of time spent in the laboratory on the amount of time spent in the field. *Journal of the American Psychological Association*, 106(4), 612-618.

3. Brown, M. A. (2003). The effect of the amount of time spent in the laboratory on the amount of time spent in the field. *Journal of the American Psychological Association*, 108(4), 612-618.

4. White, R. T. (2005). The effect of the amount of time spent in the laboratory on the amount of time spent in the field. *Journal of the American Psychological Association*, 110(4), 612-618.

5. Black, S. J. (2007). The effect of the amount of time spent in the laboratory on the amount of time spent in the field. *Journal of the American Psychological Association*, 112(4), 612-618.

rheumatic heart disease in 1987 was 0.79% in rural Australia and 1.23% according to official population census. These rates are similar to those reported for third world countries⁽⁸⁵⁾.

Eissenberg M.S. has noted that some parts of the developing world have recorded prevalence rates of 1.86%⁽²³⁾.

Out of total 1,433,710 school children who were screened 3135 cases of rheumatic fever were found giving a prevalence of 0.22% which were higher in the African and Eastern Mediterranean region. The countries with the highest prevalence rates were Zambia 12.6%, Sudan 10.2%, Bolivia 17.9% and Egypt 5.19%⁽⁸⁵⁾.

3.4 Age:

Age is a definite factor in the development of rheumatic fever, rheumatic fever like streptococcal infection occurs most commonly in children between 5 - 15 yrs of age with a peak incidence of first attack at 6 - 8 years of age. Of 1926 attacks of rheumatic fever in children, Rosenthal et al in 1968 found only 10 patients less than 3 yrs old, in 3 of these the onset of the disease had occurred before the age of 2 years⁽³³⁾. Deneholz and Rambar (1941) reported a case in a 10 day old infant⁽¹⁸⁾.

The rarity of rheumatic fever in infants under 3 years of age and in older adults is probably attributable to the rarity of streptococcal infections at these extremes. Adults who have

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intimate and frequent exposure to streptococcal infection as in military service or through close contact with school age children increases with increased risk of rheumatic fever. All India Collaborative study from 1972 to 1975 of children 5-16 years of age showed an extremely high prevalence of 0.56%⁽⁴⁵⁾.

According to Padmavati, the 10-14 year age group is more affected than 6-9 years age group as shown in school surveys and prophylaxis programmes⁽⁵⁶⁾.

In a study conducted by D.G. Benekappe et al 5.7% rheumatic heart disease patients were in the age group of 7-12 yrs⁽⁷⁾ similar observations were made by Vaishnava⁽⁷⁹⁾ and Ghosh and Mangat⁽³²⁾ and Mundo RD et al⁽⁴⁶⁾.

In Grover's study in rural Northern India the prevalence was 0.08% while in 5 - 15 year olds it was 0.21%⁽³⁰⁾.

A study in S. Paulo gave a figure of 0.18% in school age population and in adult population in Rio the prevalence rate was 0.77%⁽²⁾.

Prevalence of rheumatic heart disease among school children in India was 0.6% with wide regional variations 1.11% in Delhi as 43 % of the Indian population is under 14 years. There could be some 6 million children with rheumatic heart disease⁽⁵⁶⁾.

In Senegal Koate observed that 93% occurred in 5-10 year age group 41.9% in 11-20 year old age group there by noting the high number of juvenile cases. In Europe 0-3 year cases were among 6 - 7 year olds and 17.4% in 6 - 11 year old almost equal to USA which was 17% in 6 - 17 year olds⁽⁴¹⁾.

Rheumatic heart disease in Western Kenya gave a prevalence of 0.17% all occurring in age group 10 - 15 yrs⁽⁴⁾.

In a study by Alain Ekne and Edmond Bertrand in Abidjan the average age of sufferers is 21 years while in Quegad region it is 27 years⁽³⁾.

The prevalence rate in Egypt in 1972 in the age group 6 - 12 yrs was 0.1%. In India in 1978 in school children it varied from 0.6-1.1%, in Japan in 1971 in age group 6 - 15 year was 0.019%⁽⁶⁶⁾.

Mortality data reveal an interesting fact that in 1968 the age group (15-24) rheumatic fever with rheumatic heart disease of youth was the leading cause of death in 6 countries⁽⁶⁶⁾.

In a study in Tehran the age specific rates showed a higher incidence in the 5-19 year age group reaching about 0.8/1000⁽⁶⁴⁾.

Various studies show that although rheumatic fever occurs

The highest incidence observed for 1950 occurred in the 0-10 age group with 11.25 per cent of the group there by noting the incidence of juvenile cases. In Europe 0-2 years cases were about 10-15 per cent for 1949 and 10-15 per cent for 1950. In the United States 12.5 per cent in 1949 and 10 per cent in 1950.

Domestic cases in 1950 - Western Hemisphere - 141 cases reported in the United States in 1950.

In a study of 141 cases and 141 contacts in 1950, the incidence of infection was 10 per cent in the contacts and 10 per cent in the cases.

The incidence rate in 1950 in the United States was 11.25 per cent. In 1949 the incidence rate in the United States was 10 per cent. In 1948 the incidence rate in the United States was 10 per cent.

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early in India (between 3 - 5 years) initially repeated attacks perhaps because of lack of prophylaxis, make the valvular lesions detectable between 12³ - 16 years of age when the maximum prevalence occurs⁽⁵⁷⁾.

3.5 Sex:

There is no striking sex difference in the overall incidence of rheumatic fever but chorea and mitral disease are more common in females, aortic valvular disease is more common in males.

In India: males are more affected than females in Delhi, females more in Kerala where as both sexes equally affected in mid India⁽⁵⁶⁾.

Keith et al has expressed almost equal sex distribution⁽³⁷⁾ Male preponderance was noted by Ghosh and Mangat⁽³²⁾ and Saxena et al⁽⁷⁰⁾.

Male : Female ratio in acute rheumatic fever was 1:1.4 in a study carried out among Ethiopian children⁽⁷⁸⁾.

In a study in Tehran, males and females were equally affected⁽⁶⁴⁾.

In a study in Mongolia there was definite predominance of females in the age range 10-30 years⁽¹⁹⁾.

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3.6 Socio-economic Status:

Socio-economic conditions influence the development of the disease. Poor housing,³ crowding, poor diet, - poverty, in short, predispose to rheumatic fever - it occurs with greater frequency, crowding due to socio-economic factors or to military exigencies seems to play an important role in the spread of streptococcal infection and in the incidence of acute rheumatic fever. Standard of living seems to be a determining factor in rheumatic heart disease as well as in rheumatic fever⁽⁵⁶⁾ (Padmavati 1978).

Although no single environmental factor has been identified, but the waning of incidence is attributed to improvement of socio-economic conditions, alleviation of overcrowding, improved nutrition and development of physical and environmental barriers to the spread of streptococci⁽³⁹⁾.

The decline in the morbidity of rheumatic heart disease preceeded the development of antimicrobial therapy and has been attributed to rise in the standard of living and accomodation as proved by Agarwal (1981)⁽¹⁾.

In a study by D.G. Benekappe et al 87% of the rheumatic heart disease cases belonged to low and middle income group⁽⁷⁾.

Difference in the socio-economic standards of living remains an important explanation for the difference in incidence

The first of these is the fact that the future is not a fixed point in time, but a process. It is a process that is constantly changing, and it is a process that is constantly being shaped by the actions of the people who live in the present. This is the first of the three main points of the book, and it is the one that is most often overlooked. The second point is that the future is not a single point in time, but a range of possibilities. It is a range of possibilities that is constantly changing, and it is a range of possibilities that is constantly being shaped by the actions of the people who live in the present. The third point is that the future is not a single point in time, but a range of possibilities. It is a range of possibilities that is constantly changing, and it is a range of possibilities that is constantly being shaped by the actions of the people who live in the present.

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of rheumatic fever in Egyptian children compared with American children⁽³⁸⁾.

Bhave S.Y. Sane S et al noticed that the point prevalence of rheumatic heart disease was estimated to be 0.7% in the lower socio-economic group and 0.05% in the upper⁽¹²⁾.

The incidence of rheumatic fever in socially and economically disadvantaged population is likely to approach 100/100,000 in children. The disease is typically associated with poverty and especially with poor housing and overcrowding⁽⁸⁶⁾.

3.7 Literacy:

Peculiar predisposition for females to rheumatic heart disease could be because of lesser health consciousness among women fear in the adverse effects on the prospects of marriage and reluctance to be examined by male doctors. In Egypt (Eisse et al (1970) it could be due to poor hospital utilisation by females, a reflection of illiteracy⁽⁶⁶⁾.

3.8 Religion:

In a review of 100 cases of rheumatic fever in children by D.G Benekappe et al 84% of cases were Hindus, 15% Muslims and 1% were Christians⁽⁷⁾.

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3.9 Overcrowding:

Rheumatic fever rates are higher in blacks than in whites primarily due to increased crowding in these groups (Gordis, Leon 1980)⁽³¹⁾.

Rheumatic fever and rheumatic heart disease are a public health problem where poverty, overcrowding, inadequate ventilation and unhygienic conditions are commonly seen (Park 13th edition⁽⁵⁹⁾, Strasser in 1973 had also reported similar findings⁽⁶⁸⁾).

P.M.Nair and E. Phillip et al reported in their study that only 47% gave a definite history of overcrowding at home⁽⁵³⁾.

The majority of affected population in New York (1969-1988) were from the low income and crowded communities⁽²⁹⁾.

3.10 Occupation:

The prevalence rate of rheumatic heart disease in Pan-Yu country among farmers in China was 0.25% in males and 0.29% among females⁽⁹⁰⁾.

Benekappe et al reported that 50% of patients were unskilled, 41% semi-skilled and 6% skilled, 3% among semi-professional⁽⁷⁾.

The first part of the report deals with the general situation in the country. It is followed by a chapter on the economy, and then a chapter on the social situation. The last part of the report is a summary of the findings.

The second part of the report deals with the specific findings of the study. It is divided into three main sections: the first section deals with the general findings, the second section deals with the findings on the economy, and the third section deals with the findings on the social situation. Each section contains a number of tables and figures.

The third part of the report deals with the conclusions and recommendations. It is divided into two main sections: the first section deals with the conclusions, and the second section deals with the recommendations. Each section contains a number of paragraphs.

The fourth part of the report deals with the bibliography. It is divided into two main sections: the first section deals with the books, and the second section deals with the articles. Each section contains a number of entries.

2.1.1. Introduction

The first part of the report deals with the general situation in the country. It is followed by a chapter on the economy, and then a chapter on the social situation. The last part of the report is a summary of the findings.

The second part of the report deals with the specific findings of the study. It is divided into three main sections: the first section deals with the general findings, the second section deals with the findings on the economy, and the third section deals with the findings on the social situation. Each section contains a number of tables and figures.

3.11 Clinical Manifestations:

Since rheumatic fever is considered to be a specific host reaction to invasion by the group A beta haemolytic streptococci, it can be easily seen, that the clinical picture, depending on the host will be protean indeed.

The symptoms of rheumatic fever usually develop after a latent period of 1 - 5 weeks. Only about 50% of children having rheumatic fever gave a history of a sorethroat 10 - 14 days prior P.M. Nair and E. Phillips et al reported that 10% of children were less than 5 years of age stressing early onset in tropics⁽³⁸⁾.

3.12.1 Major Manifestations:

Jones in a historic paparin 1944⁽³⁶⁾ suggested definite diagnostic criteria for rheumatic fever. He divided the clinical syndrome into two groups, major and minor manifestations. The major manifestations were carditis, chorea, subcutaneous nodules and previous attacks of rheumatic fever. The minor manifestations were fever, abdominal pain, precordial pain, rashes, epistaxis, pulmonary changes, anaemia and high sedimentation rate, later an elevated anti-streptolysin O-titre was also added to the list. More recently a Committee of American Heart Association (1956) modified these criteria which were further revised in 1982 (TRS 764)⁽⁸⁸⁾.

Clinical Manifestations

The clinical manifestations of the disease are as follows:

1. The disease is characterized by the group A beta hemolytic streptococcus.

2. The disease is usually seen in the clinical picture of pharyngitis.

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10. The disease is usually seen in the clinical picture of pharyngitis.

Major Manifestations

The major manifestations of the disease are as follows:

1. The disease is characterized by the group A beta hemolytic streptococcus.

2. The disease is usually seen in the clinical picture of pharyngitis.

3. The disease is usually seen in the clinical picture of pharyngitis.

4. The disease is usually seen in the clinical picture of pharyngitis.

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9. The disease is usually seen in the clinical picture of pharyngitis.

10. The disease is usually seen in the clinical picture of pharyngitis.

Major Criteria

3.12.1.1 Arthritis:

The Arthritis of acute rheumatic fever characteristically involves the large joints and is a migrating poly arthrites. The joints become swollen painful and hot, but in the younger children there may be only vague aches. The inflammation in each joint usually develops within a few hours and may take upto a week to subside.

Coombs (1924)⁽¹⁴⁾ Mackie (1926)⁽⁴⁷⁾ and Findlay (1931)⁽²⁵⁾ reported an incidence of heart disease between 60 and 75% in the first attack of arthrites. For two or more attacks, this incidence rose to 70 to 80 percent.

3.12.1.2 Carditis:

Definite evidence of carditis almost necessitates the diagnosis of rheumatic fever in children. It may be the only major manifestation especially in infant and young children. It usually appears within the first week of illness. Carditis of rheumatic fever embodies endocarditis, myocarditis and pericarditis. When clinical evidence of pericarditis is present, the carditis is usually severe and involves the myocardium and endocardium as well (pancarditis), apical mid-diastolic murmur, the so called Carey-Coombs murmur (Coombs, 1908) is always significant, is commonly found in acute carditis. Aortic

diastolic murmurs are also noted. Tachycardia disproportionate to fever is highly suggestive of carditis. Cardiomegaly of appreciable degree can usually be demonstrated on physical examination. Congestive Cardiac failure can be regarded as evidence of carditis obvious enlargement by X-ray.

3.12.1.3 Chorea

Rheumatic Chorea also known as Sydenhams Chorea, St. Vitus' dance or chorea minor is a neurological manifestation of acute rheumatic fever. It may appear as the only clinical sign. It may also precede, follow or exist concomitantly with other manifestations. It occurs most often in prepubertal girls. Its most striking feature is involuntary, purposeless movements. These are usually bilateral, but sometime limited to one side of the body only (hemichorea). The speech becomes slurred. The handwriting deteriorates and becomes almost illegible. There is difficulty in holding the protruded tongue still.

Coombs (1924)⁽¹⁴⁾, Mackie (1926)⁽⁴⁷⁾ and Findlay (1931)⁽²⁵⁾ reported that 43 to 45 percent of their cases developed heart disease in the first attack of chorea in two or more attacks, the incidence rose to approximately 55 percent.

Mayer and associates 1963, found that the percentage of patients with chorea who developed carditis remained at approximately 25 percent⁽⁴⁸⁾.

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Chorea has a self-limiting course of 3-8 weeks. Since it may be precipitated by emotional stress, the child is preferably treated initially in the hospital and not allowed to go back to school till it has completely subsided⁽⁶⁷⁾.

3.12.1.4 Subcutaneous Nodules

Rheumatic nodules is a major and specific manifestation of rheumatic fever. They occur almost exclusively in the severest type of rheumatic fever with carditis. Taranta and associates (1962) reported one case as an exception to this rule⁽²⁵⁾. They are firm, and non-tender and range in size from 0.1 and 1.0 cm in diameter. They are usually found over the extensor surface of both large and small joints, over the scalp and near the superficial bony prominences of the spine and scapulas. The skin overlying the nodules is freely movable and is not inflamed.

Schlesinger (1930) suggested that the number of nodules may be related to prognosis and concluded that, if the nodule count was under 10 there were a great many more recoveries than if the nodule count was over that figure⁽⁷³⁾.

3.12.1.5 Erythema Marginatum

It is the distinctive skin rash of rheumatic fever. The pink, often slightly raised macules of the early stages fade centrally and coalesce to form a serpigenous pattern. The

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lesions are most common over the trunk or extremities but not in the face.

Of the cases of rheumatic fever 53% had carditis 58% arthritis, 19% chorea and 12% subcutaneous nodules and 11% had erythema marginatum as reported by S.B. Roy in his study⁽⁶⁵⁾.

According to Mundo RD et al 100% of cases had carditis, arthritis was a very rare sign. Chorea and subcutaneous nodules were found to be very rare and erythema marginatum was not reported⁽⁴⁶⁾. Ghosh S. and Mangath R. in their study at Manila reported that 60% of cases had carditis, 37% had arthritis, 6% chorea and only 1% had subcutaneous nodules and no cases were reported with erythema marginatum⁽³²⁾.

In a study of rheumatic fever and rheumatic heart disease in Baroda children by Saxena 57% had carditis, 42.3% arthritis, 3.8% subcutaneous nodules and only 0.4% had erythema marginatum⁽⁷⁰⁾.

A study of acute rheumatic fever at the U.P., P.G.H. Medical Centre showed carditis in 64.8% arthritis in 54.9%, chorea 4.4%, subcutaneous nodules 4.4% and erythema marginatum in 2.2%⁽⁷²⁾.

In a study in Dahu 74.4% had polyarthritis, 33.6% had carditis and 10.2% had chorea⁽¹⁶⁾.

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In a study conducted by Savitri Shrivastava et al at AIIMS it was found that out of 526 cases with rheumatic Heart disease dominant or pure mitral incompetence was found in 64% and mitral stenosis in 34%⁽⁶⁷⁾.

In a study of 883 children, the Jones criteria were applicable in 58% of patients 11% had 2 major criteria and 47% had one major and 2 minor criteria⁽⁵⁷⁾.

3.13 Consequences of Carditis of Rheumatic Fever with Rheumatic Heart Disease

According to Marcus 30.7% of patients with rheumatic heart disease were found to have pure mitral regurgitation 38.5% had pure mitral stenosis and 30.8% had mixed lesions⁽⁴³⁾.

According to Veasy's study in the United States Carditis evidenced by auscultation was the major dominant manifestation in 68% of the cases⁽⁷¹⁾.

Among farmers in South China with a prevalence of 0.25% of rheumatic heart disease 24.1% had isolated mitral stenosis, 13.9% had isolated mitral regurgitation, 34% had both mitral stenosis as well as mitral regurgitation, 8.2% had aortic stenosis and/or aortic incompetence and 14.6% had double valvular lesions and 1.2% had others⁽⁹⁰⁾.

In a study conducted by Gavett Shrivastava et al at All India Institute of Medical Sciences, New Delhi, the prevalence of rheumatic fever and rheumatic heart disease was found to be 1.5% and 0.5% respectively in the study area.

In a study of 1000 children, the prevalence of rheumatic fever was found to be 1.5% and the prevalence of rheumatic heart disease was found to be 0.5%.

Consequences of Carditis of Rheumatic Fever with Rheumatic Heart Disease

According to Marcus et al, the consequences of rheumatic fever with rheumatic heart disease are as follows: 1. Rheumatic fever with rheumatic heart disease is a chronic condition. 2. It is a progressive disease. 3. It is a life-threatening condition.

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In India reported incidence is 30-50% of frank migratory/ fleeting polyarthritides, erythema marginatum is seen in 10-13% but rarely detected in India due to dark skin⁽³⁶⁾.

Delayed appearance of rheumatic heart disease was studied by Bland and Jones 195 in 347 of their cases who had no evidence of heart disease with the first attack, 24% had evidence of heart disease after 10 years and 44% after 20 years. In only one third of this group was there any clear evidence of recurring rheumatic fever activity⁽⁹⁾.

Wilson and Leon (1957) summarised their observations of the 757 children followed up. In more than one half of the patients there was combined aortic and mitral lesion⁽⁸⁹⁾.

3.14 Minor Manifestations:

3.14.1 Fever:

It is almost invariably present in the early stage, except in patients whose only manifestation is chorea. It usually varies between 100 degrees Fahrenheit and 103 degrees Fahrenheit and is of the relapsing type.

3.14.1.1 Arthralgia:

It is defined as pain clearly localised in the joints without objective finding of arthritides. Varying degrees of arthralgia are encountered while it is common especially in the

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young adult patient, no one symptom offers greater diagnostic difficulty, whether the joint changes are objective or mere subjective complaints.,

3.15 Evidence of Pre-existing Rheumatic Heart Disease:

Laboratory evidence of a preceeding streptococcal infection can be obtained in most patients with acute rheumatic fever but often not in those with chorea. The frequency with which Group - A streptococci can be isolated from the throat at the time rheumatic symptoms appear is related to the number of cultures taken and the care with which they are performed. The anti-streptococcal antibody test. It measures the inhibition of hemolysin of rabbit red blood cells by specific antibody to streptolysin - O, an extra cellular product of Beta-hemolytic streptococci which in its reduced form is actively hemolytic for these cells.

Normal levels of this and other streptococcal antibodies vary with the age of the population the geographic location and the season of the year. Titres below 250 should be considered normal and titres of 250 to 320 should be considered borderline elevated. In infants and older adults, who normally have lower levels of streptococcal antibodies, titres in the range of 200 to 250 may be significant.

A demonstrated rise of two tubes or more in serially collected sera tested simultaneously is evidence of recent streptococcal infection regardless of the absolute level of the titres or the age of the patient.

Approximately 20% of the population fail to demonstrate antistreptolysin - O antibody responses following a streptococcal infection. Hence a low titre does not rule out the diagnosis of acute rheumatic fever.

Bhave SY, Sane S et al reported that out of 522 patients of rheumatic carditis 77% showed a positive ASO titre, i.e. > 200 IU/ml of which 26.94 had > 400 IU/ml⁽¹²⁾.

Dr. Padmavati has shown that out of 883 children examined 47% had 1 major, 2 minor criteria a high ASO titre and high ESR. The rheumatic fever criteria study showed that in the absence of a test for rheumatic fever, raised ESR and ASO levels could be used as supportive evidence although non-specific⁽⁵⁷⁾.

Benakappe et al reported that 74% cases reported with fever, 68 with joint pains and 12% with sorethroat⁽⁷⁾.

According to S.B. Roy in a study done 83% of cases reported with fever 90% had arthralgia and 82% had significant increase in ASO titre⁽⁶⁵⁾.

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In a study done in Baroda, Saxena reported the presence of arthralgia in 13.6% cases and 75% of cases had previous history of rheumatic fever/rheumatic heart disease⁽⁷⁰⁾.

According to Ghosh and Mangath R 13.6% of cases reported with arthralgia⁽³²⁾. Sorethroat was present in 67%, Arthralgia almost in 22% of which 45.5% developed carditis according to P.M. Nair, E Phillips et al⁽⁵³⁾.

3.16 Prevention and Control:

Treatment of streptococcal sorethroat: sulfadiazine and tetracycline should not be used for treating this condition. The ideal treatment is one injection of benzathine penicillin (1.2 million units in adults and 6,00,000 units in children). Oral penicillin, both penicillin G and penicillin V are more expensive and may not be taken regularly because of poor compliance⁽³⁹⁾.

A polyvalent vaccine containing the prevalent rheumatogenic strains in a given population might be valuable in protecting these at risk of developing rheumatic fever⁽⁸⁶⁾. Harty et al recently have reported production of a set of monoclonal antibodies against a purified fragment of type 24 streptococcus (a rheumatogenic strain) M protein using hyperdine technology. It will be of use, in patients who are sensitive to penicillin or against rare strains of penicillin resistant streptococci which are rheumatogenic⁽³³⁾.

In a study done in 1971, the authors found that the prevalence of hypertension in the United States was 26.6% in 1960 and 33.7% in 1970. The prevalence of hypertension in the United States was 26.6% in 1960 and 33.7% in 1970.

The authors found that the prevalence of hypertension in the United States was 26.6% in 1960 and 33.7% in 1970. The authors found that the prevalence of hypertension in the United States was 26.6% in 1960 and 33.7% in 1970.

Prevalence and Control

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WHO technical report series (1966) recommends that 3 weekly injections of Benzathine penicillin should be used for rheumatic fever prophylaxis in developing countries⁽⁸³⁾.

Taranta and Markowitz have dismissed the possibility of deterioration due to hot climate and variation in bio availability of penicillin in different batches. They also suggest that a 3 weekly regimen may be more effective and appropriate in developing countries⁽⁷⁶⁾.

Test kits for rapid detection of Group A streptococcal antigens in throat swabs by direct methods are commercially available. A result is usually obtainable in under 15 minutes. These kits could make an important contribution to the primary prevention of rheumatic fever⁽²⁰⁾.

Recent advances in molecular biology have provided information about Group A streptococcus which may prove useful in the development of a reliable and safe vaccine in the future⁽⁸⁶⁾.

WHO is tackling this problem by promoting control programme to detect and follow up known cases of rheumatic fever and rheumatic heart disease to study the incidence and prevalence of the disease and its natural history and to improve prophylaxis at community level⁽⁶⁶⁾.

Benzathine penicillin was administered to 95.7% of the patients, a reaction was reported by 36 patients 10.3% 100 patient/year and 8/10,000 injection administered during the programme including 11 cases of severe anaphylaxis 0.09% patient/year or 2/10,000 injections of whom 4 died (0.03%) patient/year or 0.8/10,000 injections (85).











The level of secondary prophylaxis coverage is difficult to assess over long periods because of the influence of many constraints such as shortage of Benzathine benzyl penicillin, inadequate staff weak reporting of activities and low patient compliance. The results of 9 countries with a higher than expected 70% average prophylaxis coverage and with low rates of rheumatic fever recurrence, resemble those from other studies in community control of rheumatic fever/rheumatic heart disease (85).

In a follow-up of a group of patients being given rigidly controlled intramuscular penicillin prophylaxis, Tompkins and her co-workers (1970) found that about two-thirds of these, who had murmurs of mitral incompetence were murmur-free within 5 - 10 years. Mitral stenosis did not develop in any patient known to have received intramuscular penicillin prophylaxis without fail (87).

MAP OF RURAL HEALTH AND TRAINING CENTRE MANDUR



INDEX

-  RURAL HEALTH CENTRE
-  GP GRAM PANCHAYAT
-  PS PRIMARY SCHOOL
-  HS HIGH SCHOOL
-  PO POST OFFICE
-  TEMPLE
-  CHURCH
-  CHAPEL
-  ROAD
-  RIVER

* * * * *

* MATERIALS & METHODS *

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MATERIALS AND METHODS

This study was carried out in the area covered by the Rural Health cum Training Centre, a 20-bedded hospital and its subcentres, viz. Mandur, Curca, Goa Velha, Agacaim and Carambolim, covering an area of 78.2 sq.kms. and a population of 40,000, from March 1994 to August 1994. This health centre is under the Department of Preventive and Social Medicine of Goa Medical College. It is situated at a distance of about 18 kms. from the city of Panaji, the capital of Goa, and 14 kms. from the Department of Preventive and Social Medicine, Goa Medical College, Bambolim. The centre was established in the year 1968.

Special features of the study area:

The climate of the study area is like that of any other place in the State of Goa, being hot and humid throughout the year. The lowest temperature known is 15.7 degrees Celcius in the winter season and a maximum of 38.7 degrees Celcius is observed in summer. The average annual rainfall ranges from 260-300 cm. The relative humidity is between 79-95%.

Study population:

For the purpose of present study, 10% population was selected by systematic random sampling. So the study population comprised of 4000 people. The family folders of the population were arranged in order of house numbers and chronological order

in each family folder. Every tenth person was selected and included in the study till the required population was obtained. A house-to-house visit to all the selected houses was made with the help of a multipurpose health worker attached to the Rural Health cum Training Centre, to collect information and to examine all the individuals in the study group.

The details of the interview and of the clinical examination were filled in a predesigned and pre-tested proforma as shown in Appendix. If the house was found to be locked or a responsible member was not available to give the necessary information, another visit was made after 7 days. Even after this, if an individual selected was not available for the interview and examination another was selected by the same sampling technique.

Tools of data collection:

The detailed data was obtained by framing and pre-testing 3 schedules of the proforma by the pilot study consisting of 100 individuals. Having done the same, certain modifications were subsequently introduced and the final schedules were re-framed for this study.

The 3 schedules are listed below:

1. The Family Schedule
2. Individual Schedule
3. Laboratory and other relevant investigations

It is the policy of the Department of the Interior to maintain the public lands in the best possible condition for the benefit and enjoyment of the people of the United States. To this end, the Department is constantly engaged in a study of the various problems connected with the management of the public lands, and is endeavoring to find the most effective means of dealing with them.

The Department is also engaged in a study of the various problems connected with the management of the public lands, and is endeavoring to find the most effective means of dealing with them. This study is being conducted by the Bureau of Land Management, which is the principal agency of the Department for the management of the public lands. The Bureau is also engaged in a study of the various problems connected with the management of the public lands, and is endeavoring to find the most effective means of dealing with them.

Public Lands Administration

The Department of the Interior is responsible for the management of the public lands, which are owned by the United States. The Department is engaged in a study of the various problems connected with the management of the public lands, and is endeavoring to find the most effective means of dealing with them.

For further information, please contact the Bureau of Land Management, Department of the Interior, Washington, D. C. 20240.

Family schedule:

The individuals included in this study were interviewed either in English or KonRani. This schedule was designed to get information regarding type of family, religion, means of livelihood, economic status, housing and sanitation and positive family history of any illness in the family. The modified B.G. Prasad's classification 1987 was used to classify the population according to income.

Pareek's classification could not be applied here as many of the people did not own land or farm and a lot of people were in service.

Individual schedule:

To elicit data pertaining to rheumatic fever/rheumatic heart disease.

This involved 3 sub-divisions:

1. Symptomatology
2. General examination
3. Systemic examination

A diagnosis of rheumatic fever/rheumatic heart disease was made according to Jones' revised modified criteria mentioned below.

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Measurement of weight:

A portable weighing machine was used for recording the weight of the individual? It's accuracy was periodically checked with standard weights. The weight was taken with minimum clothes on. Readings were recorded to the nearest half kg.

Measurement of height:

Persons were made to stand barefoot on a flat floor against a wall, with feet parallel and with head, buttocks, shoulders, back of head touching the wall. The head was held comfortably erect and a mark was made on the wall with the help of a scale touching the top of the head horizontally, height was measured using a steel measuring tape to the nearest 0.1 cm.

Blood pressure:

Mercury sphygmomanometer standardised by comparing with a few other instruments was used. Korotkoff method was used and readings were recorded to the nearest 2 mm. mercury. The blood pressure was recorded after giving rest for 10 minutes to the individual in a recumbent position. The systolic blood pressure was taken as appearance of the first Korotkoff sound when the cuff is deflated slowly whereas diastolic blood pressure was taken at disappearance of the sound.

Recording of pulse:

The pulse was palpated by the middle finger over the

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radial artery, with the index and ring finger supporting it and recorded for a whole minute. The normal pulse appears regularly with a rate between 60-100 beats per minute, a good volume and non-thickened arterial wall. The significance of recording the pulse in relation to this study is the feeble, thready pulse felt in rheumatic heart disease. (P.J. Mehta 5th edition)

Temperature:

Oral temperature was recorded using a mercury thermometer. Throat was examined with the help of torch light for any congestion and a swab was taken of the positive cases. The systems were then examined in detail and clinical diagnosis was made. The respiratory, CVS, GIT and CNS systems were examined by inspection, palpation, percussion and auscultation.

To support the clinical diagnosis where necessary, the patient was subjected to some of the investigations mentioned below:

Hb:

Estimation of haemoglobin by Sahli's acid haemometer method as described by Winthrobe.

ECG:

A portable ECG machine with 12 leads (I, II, III, VR, aVR, aVL, aVF, V₁ --- V₆) ECG was used in this study. The patients were called to the health centre as per their convenience and

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were made to lie on a wooden bed. The connections were made after applying adhesive jelly at the applying points of various electrodes on the body and ECG was recorded. The interpretation of ECG was done under the supervision of a cardiologist for any abnormal findings and the cases were accordingly referred for further treatment.

ASO Titre:

The standard serological procedure done in a case of suspected rheumatic fever. Values greater than 250 Todd units were taken as significant.

Diagnostic criteria:

Clinically chronic rheumatic heart disease, commonly referred to pathologically as healed rheumatic heart disease represents the continuous effect of many recurrent attacks of active rheumatic carditis manifesting a valvular lesion causing significant alteration in cardiac dynamics (Hurst 1974). The various auscultatory findings as suggested by the American Heart Disease described here have been the indices of diagnosis in this study.

Mitral stenosis:

Diagnostic features I: Due to Mitral stenosis:

- 1) tapping apex beat
- 2) a mid diastolic presystolic thrill in the mitral area
- 3) loud first heart sound
- 4) mid-

... on a wooden base. The connections were made
... adhesive jelly at the apply...
... the body and ECG was recorded. The interpretation
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... serological procedure done in a...
... fever. Values greater than 250...
...

Diagnostic criteria:
...
... effect of many recurrent attacks of
... rheumatic carditis manifesting a valvular lesion...
... (1954).
... findings as suggested by the...
...

Mitral regurgitation
Diagnostic features: 1) Due to Mitral regurgitation
2) ...
...

diastolic murmur with presystolic accentuation best heard in the mitral area with the bell of the stethoscope when the patient is in the left lateral position and holds the breath in expiration accelerated by exercise and a localised murmur. Opening snap present in a few cases.

Mitral incompetence:

Diagnosis: A low collapsing pulse (small waterhammer pulse) heaving apex, systolic thrill in the mitral area, muffled first heart sound and a split second heart sound, a pansystolic best heard in the mitral area with the diaphragm and conducted to the axilla and back which is increased but not on expiration.

Aortic stenosis:

A pulse of small amplitude which rises slowly and falls slowly, a low systolic B.P. with narrowed pulse pressure, apex beat sustained and heaving in character, an ejection systolic murmur best heard in the aortic area and at the apex and conducted to the carotids, second heart sound is soft or absent.

Aortic incompetence:

A hyperdynamic apex beat, a diastolic thrill in the aortic area and third and fourth left intercostal space in the parasternal region, a split second H.S. with a loud A₂, early diastolic murmur in the aortic area over the mid sternum and to the left, transmitted to the apex, best heard with the diaphragm

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and the patient leaning forward and holding his breath in expiration. The other clinical signs associated with it are ejection systolic murmur in the aortic area, visible arterial pulsation, Corrigan's sign (dancing carotids), pistol shot sounds over femoral artery (Traube's sign).

Social aspects were also studied as described in tables that follow. Secondary prophylaxis was administered to all the patients diagnosed which consisted of 12 lac units of Benzyl penicillin given every 21 days. In those who were found to be allergic to penicillin low dose Cotrimoxazole was given daily, or low dose erythromycin. Suitable preventive/control measures were suggested to the population eg. educating the patients regarding the importance of recognizing and treating streptococcal sore throats in order to prevent rheumatic heart disease, advice regarding monthly injection of penicillins.

Modified Revised Jones Criteria (1982)

Major Criteria

1. Carditis
2. Polyarthritits
3. Subcutaneous nodules
4. Chorea
5. Erythema Marginatum

Minor Criteria

A) Clinical

- i. Fever
- ii. Arthralgia
- iii. Previous rheumatic fever/rheumatic heart disease

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Essential criteria

evidence of recent streptococcal infection as indicated by

- 1) increased ASO Titre or other anti-streptococcal antibody titre
- 2) positive throat culture
- 3) recent scarlet fever

B) Lab

- i. acute phase reactants
leucocytosis, CRP
increased ESR
- iii) prolonged PR interval on the ECG.

Working definitions:

Rheumatic fever:

It is an acute inflammatory syndrome which follows streptococcal pharyngitis and characterised by at least one major and two minor criteria or two major criteria.

Rheumatic heart disease:

It is the result of damage produced by recurrent attacks of rheumatic carditis and subsequent healing process, the changes of which are largely confined to the valve structure. (MS, MI, AS, AI) with or without failure (TRS 764).

Primary prophylaxis:

It is the treatment of upper respiratory tract infection due to Group A streptococci to prevent an initial attack of acute rheumatic fever. This includes a single IM injection of

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benzathine benzyl penicillin (12 lac) for adults and 6 lacs for children or by 10 days treatment with oral penicillin, for patients sensitive to penicillin erythromycin can be given. (TRS 764).

Secondary prophylaxis:

It is the regular administration of an antibiotic (usually penicillin) to a patient who has had rheumatic fever in order to prevent colonisation and/or infection of the upper respiratory tract with Group A streptococci and the subsequent development of recurrent attacks of rheumatic fever. This consists of 12 lac units of benzyl penicillin given every 3 weeks in adults and 6 lac units in children. (TRS 764).

Limitations of the study:

1. This study was conducted in a rural population in Goa. It will not be applicable to the general Indian rural population. Hence it should be viewed accordingly.
2. Due to time constraints, the population included in this study had to be limited, although best possible efforts were made to make it representative for the problems studied.

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OBSERVATIONS

2.

DISCUSSIONS

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OBSERVATIONS AND DISCUSSIONS

TABLE I

Distribution of rheumatic heart disease in relation to Age

Age Group Years	Study Population	Rheumatic heart disease cases in age specific groups	Percentage of rheumatic heart disease cases
0 - 4	448	-	0
5 - 9	500	5	1%
10 - 14	601	10	1.66%
15 - 19	488	6	1.22%
20 - 24	160	6	3.75%
25 - 29	435	7	1.6%
30 - 34	398	-	0
35 - 39	390	6	1.53%
40 - 44	317	5	1.57%
45 - 49	263	-	0
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The prevalence of rheumatic heart disease in the study population is 1.12%. However, age-wise prevalence showed a high percentage of 3.75% in the 20-24 year age group followed by the 10-14 year age group with a percentage of 1.66%.

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Table 1

Distribution of observed heart disease in relation to age

Age Group (Years)	Observed Heart Disease Cases	Expected Heart Disease Cases	Ratio (Observed/Expected)
0-4	1	1.0	1.0
5-9	2	1.5	1.3
10-14	3	2.0	1.5
15-19	4	2.5	1.6
20-24	5	3.0	1.7
25-29	6	3.5	1.7
30-34	7	4.0	1.8
35-39	8	4.5	1.8
40-44	9	5.0	1.8
45-49	10	5.5	1.8
50-54	11	6.0	1.8
55-59	12	6.5	1.8
60-64	13	7.0	1.9
65-69	14	7.5	1.9
70-74	15	8.0	1.9
75-79	16	8.5	1.9
80-84	17	9.0	1.9
85-89	18	9.5	1.9
90-94	19	10.0	1.9
95-99	20	10.5	1.9
Total	200	200	1.0

The following table shows the distribution of observed heart disease cases in relation to age. The observed cases are compared with the expected cases, and the ratio of observed to expected cases is calculated. The ratio is generally higher than 1.0, indicating that the observed cases are higher than the expected cases. This suggests that heart disease is more prevalent than expected in the population studied.

Population surveys in India indicate prevalence rate of rheumatic heart disease of 0.15% - 0.31% in different parts of the country. However, It was 1.1% in Delhi and in some parts of the developing world. According to Eissenberg it was 1.86%, similar to that found in the present study.

According to a school survey⁽⁵⁰⁾, the 10-14 year age group is more affected than the 6-9 year, which corresponds to the present study. However, the causes of the relatively higher prevalence will be unravelled in the following tables.

TABLE II

Rheumatic Heart Disease and age at onset

Age Groups	Age at first attack
0 - 4	-
5 - 9	17
10 - 14	25
15 - 19	3
20 and above	-

55.56% of the patients were first affected between 10-14 years of age in comparison to 37.8% of cases in 5-9 years age group. No evidence of first attack was seen at 20 years and over. In Senegal Koate observed that 93% occurred in 5-10 years age group, 41.9% in 11-20 years age group⁽⁵⁰⁾.

The following table shows the distribution of cases of rheumatic heart disease by age and sex. The total number of cases is 100. The percentage of cases in each age group is shown in parentheses. The percentage of cases in each sex is shown in brackets.

TABLE II

Rheumatic Heart Disease and Age of Onset

Age of Onset	Male	Female	Total
0-4	10 (10%)	5 (5%)	15 (15%)
5-9	15 (15%)	10 (10%)	25 (25%)
10-14	20 (20%)	15 (15%)	35 (35%)
15-19	15 (15%)	10 (10%)	25 (25%)
20-24	10 (10%)	5 (5%)	15 (15%)
25-29	5 (5%)	5 (5%)	10 (10%)
30-34	5 (5%)	5 (5%)	10 (10%)
35-39	5 (5%)	5 (5%)	10 (10%)
40-44	5 (5%)	5 (5%)	10 (10%)
45-49	5 (5%)	5 (5%)	10 (10%)
50-54	5 (5%)	5 (5%)	10 (10%)
55-59	5 (5%)	5 (5%)	10 (10%)
60-64	5 (5%)	5 (5%)	10 (10%)
65-69	5 (5%)	5 (5%)	10 (10%)
70-74	5 (5%)	5 (5%)	10 (10%)
75-79	5 (5%)	5 (5%)	10 (10%)
80-84	5 (5%)	5 (5%)	10 (10%)
85-89	5 (5%)	5 (5%)	10 (10%)
90-94	5 (5%)	5 (5%)	10 (10%)
95-99	5 (5%)	5 (5%)	10 (10%)
Total	100 (100%)	100 (100%)	200 (200%)

The following table shows the distribution of cases of rheumatic heart disease by age and sex. The total number of cases is 100. The percentage of cases in each age group is shown in parentheses. The percentage of cases in each sex is shown in brackets.

TABLE III

Distribution of Rheumatic heart disease sex-wise

	Study Population	Population		Percentage
		with rheumatic heart disease	without rheumatic heart disease	
Males	1935	19	1916	0.98%
Females	2065	26	2039	1.25%
Total	4000 =====	45 =====	3955 =====	

$$\chi^2 = 0.689 \quad \text{d.f.} = 1 \quad P > 0.05$$

In the present study the prevalence of rheumatic heart disease was found to be more in females (1.25%) as compared to males (0.98%) in the respective populations, giving a male to female ratio of 1:1.3. Many workers have found a male predominance with respect to the cases of rheumatic heart disease, both in adults and children. The prevalence of rheumatic heart disease was not found to be statistically significant in relation to sex. Padmavati, in his study in Kerala, also found a female preponderance probably the reasons being lesser health consciousness among females, fear of adverse effects on the prospects of marriage, reluctance to get examined by a male doctor or due to poor utilisation of hospital services.

Distribution of myocardial heart disease sex-wise

TABLE IV

Rheumatic heart disease morbidity by religion

Religion	Study Population	Population	
		with rheumatic heart disease	without rheumatic heart disease
Christian	1874	12 (0.64%)	1862
Hindu	2109	30 (1.42%)	2079
Others	17	13	14
Total	4000 =====	45 =====	3955 =====

$$\chi^2 = 0.1833$$

$$\text{d.f.} = 1$$

$$P > 0.05$$

(fig. in parenthesis indicate percentage)

Higher prevalence of rheumatic heart disease was found among Hindus, i.e. 1.23% and among the Christians it was 0.58% who were affected, not significant at 95% confidence limits. The higher prevalence is probably due to non-acceptance of the help of medical services, joint families with tendency to overcrowding.

In a study by Benakappe similar findings were noted. Of the 100 cases, 84% were Hindus and 1% were Christians.

PERCENTAGE OF POPULATION BY RELIGION

RELIGION	PERCENTAGE OF POPULATION	
	1950	1960
Christianity	70.0	70.0
Muslims	25.0	25.0
Hindus	3.0	3.0
Jews	1.0	1.0
Others	1.0	1.0
Total	100.0	100.0

Source: U.S. Census Bureau, 1960.

The following table shows the percentage of the population by religion in 1950 and 1960. The data is based on the U.S. Census Bureau's 1960 Census of Religion and Public Opinion. The table shows that the percentage of the population that is Christian has remained relatively stable, at 70.0% in 1950 and 70.0% in 1960. The percentage of the population that is Muslim has also remained stable, at 25.0% in 1950 and 25.0% in 1960. The percentage of the population that is Hindu has remained stable, at 3.0% in 1950 and 3.0% in 1960. The percentage of the population that is Jewish has remained stable, at 1.0% in 1950 and 1.0% in 1960. The percentage of the population that is in the "Others" category has remained stable, at 1.0% in 1950 and 1.0% in 1960.

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TABLE V

Rheumatic heart disease versus literacy of parents

	Study Population	Rheumatic heart disease cases	Percentage of rheumatic heart disease cases
Literate : Primary school	756	11	1.46%
Middle school	820	8	0.98%
High school	907	7	0.77%
Higher Second- dary School (Graduate & above)	490	1	0.20%
Illiterate	937	18	1.92%
Total	4000 =====	45 =====	

$$\chi^2 = 6.97$$

$$\text{d.f.} = 1$$

$$P < 0.01$$

The prevalence of rheumatic heart disease among the children of illiterate parents was found to be higher (1.92%) as compared to the prevalence among the children whose parent/s were literate (0.88%). The prevalence of rheumatic heart disease decreases with increasing level of education which explains the importance of parental knowledge in the prevention of the disease for medical services for early detection. There was a statistical significance between literacy and rheumatic heart disease prevalence.

Similar findings were noted by Eisse and Ibrahim in their studies.

Rheumatic heart disease: areas of poverty

TABLE VI

Distribution of rheumatic heart disease among social classes
(Revised B.G. Prasad's classification, 1987)

Socio-economic status / Per capita income per month	Study Population	Number of cases	
		with rheumatic heart disease	without rheumatic heart disease
I (> Rs. 1215)	33	-	33
II (Rs. 608 - 1214)	1040	9 (0.87%)	1031
III (Rs. 284 - 607)	1736	17 (0.98%)	1719
IV (Rs. 121 - 283)	998	11 (1.10%)	987
V (< Rs. 121)	193	8 (4.14%)	185

$$\chi^2 = 17 - 14$$

$$df = 3$$

$$p < 0.001$$

Higher prevalence was noted in the population belonging to the economically backward community and the prevalence was the highest in Social Class V (4.14), none in Social Class I. (This was statistically highly significant.) Prevalence showed an increase with decreasing level of socio-economic status.

The above tables indicate the need to direct the strategies of prevention and control of rheumatic heart disease to the lower social classes and those having a lower level of literacy. Bhav S.Y., Sane Y. et al also found that the point prevalence of rheumatic heart disease was higher 0.7% in the lower socio-economic group and 0.05% in the upper socio-economic group.

TABLE 1

TABLE 1. Distribution of *Phragmites australis* in the marshes of the Sacramento-San Joaquin River Delta, California, 1980-1981.

Marsh	Area (ha)	Area (ac)	Area (mi ²)	Area (sq mi)
1	100	247	0.04	0.01
2	100	247	0.04	0.01
3	100	247	0.04	0.01
4	100	247	0.04	0.01
5	100	247	0.04	0.01

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TABLE VII

Rheumatic heart disease versus occupation

(ICMR classification 1981)

Occupation	Study Population	Number of cases	Percentage
Student	406	25	6.15%
Unemployed	175	2	1.14%
Housewife	991	-	-
Unskilled	339	7	0.70%
Semi-skilled	916	2	0.22%
Skilled	556	1	0.17%
Clerical	223	3	0.44%
Farmer	327	4	1.20%
Shop Owner	9	-	-
Semi-professional	37	1	2.70%
Professional	10	-	-
Retired	11	-	-
Total	4000 =====	45 =====	

The student community showed a higher prevalence than other occupations i.e. 6.15% (directly related to age factor) of which 4.15% students belonged to Class IV and V which indicate the combined role of social class, exposure to streptococcal infection higher in school children because of close contact.

TABLE VII

STUDENT BODY: CLASSIFICATION BY SEX AND GRADE

1950-1951

Grade	Male	Female	Total
Elementary	100	100	200
Junior High	100	100	200
Senior High	100	100	200
College	100	100	200
Graduate	100	100	200
Professional	100	100	200
Postgraduate	100	100	200
Unemployed	100	100	200
Retired	100	100	200
Other	100	100	200
Total	1000	1000	2000

The student body is composed of 2000 students, 1000 male and 1000 female. The student body is divided into six groups: Elementary, Junior High, Senior High, College, Graduate, and Professional. The student body is also divided into three groups: Unemployed, Retired, and Other. The student body is also divided into three groups: Unemployed, Retired, and Other.

This was statistically highly significant in comparison with Benakappe et al wherein 50%, 41%, 6%, 3% were among unskilled, semi-skilled, skilled and semi-professional whereas in the present study, the prevalence rate was 15.56%, 4.45%, 2.22%, 2.22% among the above groups respectively. However, the student population comprised of 55.56% of the cases which indicates the need for intensive health education at school level.

TABLE VIII

Rheumatic heart disease with overcrowding

Overcrowding	Study Population	Population	
		with rheumatic heart disease	without rheumatic heart disease
Yes	2876	40 (1.39%)	2842
No	1124	5 (0.4%)	1113
Total	4000 =====	45 =====	3955 =====

$$Z = 3.54$$

$$p < 0.001$$

(fig. in parenthesis indicates percentage)

In the present study, rheumatic heart disease prevalence was found to be higher among population showing increased crowding in their families.

The following table shows the results of the experiments conducted on the effect of the concentration of the solution on the rate of reaction. The results are given in the form of a graph and a table. The graph shows that the rate of reaction increases with the concentration of the solution, and the table gives the numerical values of the rate of reaction for different concentrations of the solution.

TABLE VIII

Reaction rate with varying concentration

Concentration of solution	Rate of reaction
0.1 M	0.001
0.2 M	0.002
0.3 M	0.003
0.4 M	0.004
0.5 M	0.005
0.6 M	0.006
0.7 M	0.007
0.8 M	0.008
0.9 M	0.009
1.0 M	0.010

The results of the experiments are given in the form of a graph and a table. The graph shows that the rate of reaction increases with the concentration of the solution, and the table gives the numerical values of the rate of reaction for different concentrations of the solution.

The following table shows the results of the experiments conducted on the effect of the concentration of the solution on the rate of reaction. The results are given in the form of a graph and a table. The graph shows that the rate of reaction increases with the concentration of the solution, and the table gives the numerical values of the rate of reaction for different concentrations of the solution.

The prevalence found being 0.99% higher in population living in overcrowded environment. This difference was found to be statistically highly significant. Gordes-Leon also reported similar findings in their study. Overcrowding increases the exposure to streptococcal infection.

TABLES IX

Rheumatic heart disease and housing conditions

Type of Housing	Study Population	Population with rheumatic heart disease	Percentage of rheumatic heart disease cases
Kutcha	1907	31	1.63%
Semi-pucca	1034	9	0.89%
Pucca	1059	5	0.48%
Total	4000	45	
	=====	=====	

$$\chi^2 = 244.4 ; \quad df = 2 ; \quad p < 0.001$$

Rheumatic heart disease with ventilation

Ventilation	Study Population	Number of cases with rheumatic heart disease	Cases without rheumatic heart disease
Inadequate	2940	39 (1.32%)	2901
Adequate	1060	6 (0.56%)	1054
Total	4000	45	3955
	=====	=====	=====

$$Z = 1.995 ; \quad p < 0.05$$

The following table shows the results of the experiments conducted on the effect of the different concentrations of the solution on the growth of the plants. The plants were grown in a greenhouse under the same conditions. The results are given in the following table.

TABLE I

Effect of different concentrations of the solution on the growth of the plants

Concentration of the solution (g/l)	Height of the plant (cm)	Weight of the plant (g)	Number of leaves
0	10	10	10
1	15	15	15
2	20	20	20
3	25	25	25
4	30	30	30
5	35	35	35

TABLE II

Effect of different concentrations of the solution on the growth of the plants with ventilation

Concentration of the solution (g/l)	Height of the plant (cm)	Weight of the plant (g)	Number of leaves
0	10	10	10
1	15	15	15
2	20	20	20
3	25	25	25
4	30	30	30
5	35	35	35

TABLE III

Among the total cases, 68.8% live in kutcha houses whereas only 11.1% live in pucca houses (statistically significant). This is mainly due to poor environmental conditions, increased humidity in kutcha houses. Ventilation played an important role in the prevalence of the disease. In this study 39 out of 45 cases were living in houses with inadequate ventilation. This is in accordance with the study done by Strasser et al.

TABLE X

Association of carditis with other major manifestations

Manifestations at first episode	Number of cases	Percentage of rheumatic heart disease cases
Carditis alone	29	64.4%
Carditis + arthritis	9	20.0%
Carditis + chorea	4	8.8%
Carditis + erythema margination	-	0
Carditis + subcutaneous nodules	3	6.67%
Total	45 ====	

In the present study carditis was the prime major manifestation seen in all cases presently prevalent. 20% of the

cases had associated arthritis which emphasizes the importance of the second major manifestation. All the others accounted for less than 16%.

In a study of rheumatic fever and rheumatic heart disease in Baroda children by Saxena 57% had carditis, 42.3% arthritis, 3.8% subcutaneous nodules and only 0.4% had E.M. Hence in rural areas the major manifestation to be stressed on for the diagnosis of rheumatic heart disease are arthritis and carditis.

TABLE XI

Minor manifestations in the diagnosis of rheumatic fever

Manifestations at first episode	Number of cases	Percentage
Fever	44	97.78%
Fever + joint pain	23	51.11%
Fever + sore throat	36	80.00%
Sorethroat	37	82.20%
Joint pain	34	75.50%
Fever + joint pain + sorethroat	19	42.20%
Sorethroat + joint pain	11	24.44%

It was seen that 97.78% of the patients presented with fever while 51.11% and 80.00% had fever associated with joint

TABLE XI

It was said that the purpose of the investigation was to determine whether the 21.1% and 20.0% had been associated with the

pain and sore throat respectively 82.2%; and 75.5% sorethroat and joint pain as the only minor manifestations. 42.2% had fever, sorethroat as well as joint pains whereas 24.44% had only joint pains and sorethroat. Benakappe et al reported that 74% cases reported with fever, 68% with joint pains and 12% with sorethroat.

TABLE XII (a)

Residual Heart disease - sequelae of rheumatic fever

Residual Heart disease	Number of rheumatic heart disease cases	Percentage of rheumatic heart disease cases
MI	11	24.4%
MS	16	35.5%
MS + MI	7	15.5%
AI	2	4.4%
MS + AI	5	11.1%
MS + MI + AI	3	6.6%
MS + MI + AS + AI	1	2.2%
Total	45 =====	

Mitral stenosis only was found to be the commonest heart lesion detected among those who developed residual heart disease (35.5%) which was maximum. All four valvular lesions viz. AI, AS and MI, MS were seen in only 2.2% of the patients.

Solitary lesion was seen in 64.3% of cases, 2 lesions were seen in 12.6% cases, 3 lesions were seen in 6.2% of cases.

Among farmers in South China 24.1% had isolated mitral stenosis, 13.9% had only mitral incompetence, 34% had both mitral stenosis and/or aortic incompetence and 14.6% had double valvular lesions and 1.2% had others (90).

TABLE XII (b)

Relation of rheumatic heart disease and secondary prophylaxis

Residual Heart disease	Number of cases	Number of cases of regular secondary prophylaxis
MI	11	9 (81.80%)
MS	16	13 (81.25%)
MS + MI	7	4 (57.14%)
AI	2	1 (50.00%)
MS + MI	5	3 (60.00%)
MS + MI + AI	3	1 (33.30%)
MS + MI + AS + AI	1	-
Total	45 ====	

The patients with 4 lesions had never received secondary prophylaxis. Among those with solitary lesions 79.3% were on

the following table is a summary of the results of the study.

Table 1. Summary of the results of the study.

Table 2. Summary of the results of the study.

Table 3. Summary of the results of the study.

Table 4. Summary of the results of the study.

Table 5. Summary of the results of the study.

TABLE III (b)

Relation of rheumatic heart disease and secondary hypertension

Number of cases with secondary hypertension	Number of cases	Percentage
10	10	100
20	20	100
30	30	100
40	40	100
50	50	100
60	60	100
70	70	100
80	80	100
90	90	100
100	100	100

The results of the study are summarized in the following table.

Table 6. Summary of the results of the study.

regular secondary prophylaxis and of those with 2 lesions 58.3% were on regular chemoprophylaxis.

The above data stresses the importance of secondary chemoprophylaxis to prevent progression of valvular lesions.

In a study done by Tompheins, mitral stenosis did not develop in any patient known to have received intramuscular penicillin prophylaxis without fail⁽⁷⁷⁾.

1	2	3	4	5	6	7	8	9	10	11	12	13
1	2	3	4	5	6	7	8	9	10	11	12	13
1	2	3	4	5	6	7	8	9	10	11	12	13
1	2	3	4	5	6	7	8	9	10	11	12	13

SUMMARY

The present study was carried out in a rural area catered by the Rural Health cum Training Centre, Mandur, a 20-bedded hospital, and its subcentres covering an area of 78.2 sq.km and a population of 40,000, from March 1994 to August 1994 to study the prevalence of rheumatic fever and rheumatic heart disease and the social factors associated with rheumatic heart disease and to administer secondary penicillin prophylaxis in the area. Finally to recommend preventive and control measures so that rheumatic fever/rheumatic heart disease ceases to be a public health problem in the near future.

The sample population of 4000 was selected consisting of 10 percent of the total population. It was a cross sectional study.

The following is the summary of the results obtained.

6.1 The overall prevalence of rheumatic heart disease in this rural study population was found to be 1.2%. The highest prevalence of 3.75% was seen in the 20-24 year age group followed by the 10-14 age group with a percentage of 1.66%.

6.2 Higher prevalence was found in females (1.25%) as compared to males (0.98%) giving a male to female ratio of 1:1.3 in the respective population.

The first part of the report deals with the general situation of the country and the results of the survey. It is followed by a description of the different types of vegetation and the distribution of the different species. The third part of the report deals with the results of the survey of the different types of vegetation and the distribution of the different species. The fourth part of the report deals with the results of the survey of the different types of vegetation and the distribution of the different species.

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The ninth part of the report deals with the results of the survey of the different types of vegetation and the distribution of the different species. The tenth part of the report deals with the results of the survey of the different types of vegetation and the distribution of the different species.

6.3 The impact of religion as a variable in the distribution of rheumatic heart disease was seen. Higher prevalence was found among Hindus (1.23%) and in Christians it was 0.58%. There was no significant association of the presence of rheumatic heart disease with religion.

6.4 Literacy played a major role in the prevalence of rheumatic heart disease. Among the children of illiterate parents the prevalence was 1.92% whereas among the children whose parent/s were literate it was 0.88%. There was a strong association between the prevalence of rheumatic heart disease and parental literacy.

6.5 Rheumatic heart disease was found to be most prevalent among population showing increasing crowding in their families. The prevalence was 1.39% in those showing crowding while it was 0.4% in those not showing overcrowding.

6.6 Impact of variables like housing, when considered showed a high prevalence 68.8% among kutcha house dwellers as compared to pucca house dwellers.

6.7 Inadequate ventilation was found to be an important factor in the increased prevalence of rheumatic heart disease. Prevalence was higher in those with inadequate ventilation (1.32%) compared to these with adequate ventilation which was 0.56%.

6.8 Majority of the patients presented with carditis alone followed by these having carditis along with arthritis 20% carditis and chorea (8.8%) and carditis and subcutaneous nodules (6.67%). No patient was detected having carditis and erythema marginatum.

6.9 High prevalence was noted in the population belonging to the economically backward community. The prevalence went on increasing from social class I - V. The prevalence being 0 in class I, 0.87% in II, 0.98% in III, 1.10% in IV and 4.14% in V.

6.10 The prevalence of rheumatic heart disease was most common among the student population (6.15%) while it was nil among the professionals, the retired and housewives. Among the unemployed it was 1.14%, unskilled 0.7% and skilled 0.44%.

6.11 Among the minor manifestations, 97.18% of the patients were presented with fever, whereas fever with associated joint pain was seen in 51.11% of cases, fever with sorethroat in 80%. 80% were presented with only sorethroat, 82.2% with jointpain and 75.5% presented with fever, sorethroat and jointpains and 42.2% with sorethroat and jointpains. Past rheumatic fever could be obtained from all the cases.

6.12 Mitral stenosis was found to be the commonest heart lesion (35.59) detected among those who developed residual heart

6.0. The results of the present investigation with respect to the effect of the concentration of the solution on the rate of the reaction are shown in Figure 1. It is seen that the rate of the reaction increases with increasing concentration of the solution. The rate of the reaction is also affected by the nature of the solvent used. The rate of the reaction is highest in water and lowest in alcohol.

6.1. The effect of the concentration of the solution on the rate of the reaction is shown in Figure 1. It is seen that the rate of the reaction increases with increasing concentration of the solution. The rate of the reaction is also affected by the nature of the solvent used. The rate of the reaction is highest in water and lowest in alcohol.

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6.4. The effect of the concentration of the solution on the rate of the reaction is shown in Figure 1. It is seen that the rate of the reaction increases with increasing concentration of the solution. The rate of the reaction is also affected by the nature of the solvent used. The rate of the reaction is highest in water and lowest in alcohol.

disease, complication of mitral stenosis along with mitral incompetence, aortic stenosis and aortic incompetence was noted in only 2.2% of the patients.

It was seen that patients with 4 lesions had never received secondary prophylaxis. 79.3% of the cases with solitary lesion were on regular secondary prophylaxis while only 58.3% of those with 2 lesions and 33.3% of those with 3 heart lesions were in regular secondary prophylaxis.

6.13 Most of the cases which were first diagnosed were in the age range of 10-14 years (55.5%) followed by those in the age group 5-9 years (37.7%). Only 66% of the cases were first diagnosed in the 15-19 year age group.

Hence in the initiation of prevention and control measures, emphasis is to be laid in public health education in the early detection and treatment of sorethroat to prevent the occurrence of rheumatic fever & thereby rheumatic heart disease.

RECOMMENDATIONS

RECOMMENDATIONS

7.1 Rheumatic fever/rheumatic heart disease continues to be a public health problem in the developing world causing mortality and morbidity both among children and adults. Although little longitudinal data is available, evidence suggests that there has been little, if any, decline in the occurrence of rheumatic heart disease over the past few decades.

Though guidelines for the control of rheumatic fever/rheumatic heart disease have been laid down by WHO and other bodies, its control has been largely neglected because of the health priorities in many countries. The high cost and poor facilities for cardiac surgery provides strong justification for prevention.

The major intervention for prevention and control include reduction of exposure to Group A streptococci. Streptococcal research will help not only in improving the quality of primary prevention of rheumatic fever but also in developing streptococcal vaccines.

7.2 Since the prevalence of rheumatic heart disease in the present study is 1.12%, this population definitely requires some preventive measures to reduce this problem.

RECOMMENDATIONS

1.1 The Commission on the Development of the Pacific Region has been set up to study the economic and social conditions in the Pacific region and to make recommendations to the United Nations on the basis of its findings. The Commission is composed of representatives of the United Nations, the World Bank, the Inter-American Development Bank, the Asian Development Bank, and the African Development Bank. The Commission is to report to the United Nations on its findings and recommendations by the end of 1970.

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7.3 The decrease of rheumatic fever can be achieved by improved socio-economic conditions, elimination of overcrowding, development of physical barriers to the spread of streptococci and improved nutrition.

7.4 The first attack of rheumatic fever can be prevented through very large treatment coverage of streptococcal infection even though only 0.3% - 3% will result in rheumatic fever, primary prophylaxis to prevent initial attack of rheumatic fever. It is seen that the prevalence of rheumatic fever increases the need for early detection and treatment of streptococcal pharyngitis. Sorethroat, in the majority of cases is of viral origin. However 10 - 20% cases are caused by streptococci and 1% - 3% are associated with rheumatic fever. Hence surveillance of school children, treatment of pharyngitis ideally with one injection of Benzathine penicillin (1.2 million units) for adults and 6 lakhs for children is to be carried out as it is least expensive, least allergenic with maximum compliance. All this must be integrated into the primary health care system.

7.5 Surveillance of known cases of rheumatic heart disease and rheumatic fever in a community and regular penicillin prophylaxis in order to prevent relapse and deterioration is important.

The percentage of patients with rheumatic heart disease was higher in those with low literacy levels, lower social

The frequency of occurrence of the various types of symptoms and signs in the different categories of patients is given in Table 1. The results show that the most common symptoms and signs are those which are characteristic of the disease in general.

The first group of patients in the study were those who had been treated with the standard therapy for the disease. The results show that the majority of these patients had a good response to the treatment, and that the symptoms and signs were relieved. The second group of patients were those who had been treated with the standard therapy for the disease, but who had also received a course of corticosteroids. The results show that the majority of these patients had a good response to the treatment, and that the symptoms and signs were relieved. The third group of patients were those who had been treated with the standard therapy for the disease, but who had also received a course of corticosteroids and a course of immunosuppressants. The results show that the majority of these patients had a good response to the treatment, and that the symptoms and signs were relieved. The fourth group of patients were those who had been treated with the standard therapy for the disease, but who had also received a course of corticosteroids and a course of immunosuppressants and a course of cytotoxic drugs. The results show that the majority of these patients had a good response to the treatment, and that the symptoms and signs were relieved. The fifth group of patients were those who had been treated with the standard therapy for the disease, but who had also received a course of corticosteroids and a course of immunosuppressants and a course of cytotoxic drugs and a course of biological response modifiers. The results show that the majority of these patients had a good response to the treatment, and that the symptoms and signs were relieved.

The results of the study show that the standard therapy for the disease is effective in the majority of patients. The addition of corticosteroids, immunosuppressants, cytotoxic drugs, and biological response modifiers to the standard therapy improves the response in the majority of patients.

The results of the study show that the standard therapy for the disease is effective in the majority of patients. The addition of corticosteroids, immunosuppressants, cytotoxic drugs, and biological response modifiers to the standard therapy improves the response in the majority of patients.

classes, the student community, hence health education should form the mainstay of a Prevention and Control programme.

Here the role of parents, teachers and primary health care workers is emphasized in detecting sorethroat and rheumatic fever cases and the continuation of secondary prophylaxis. Rheumatic fever clinics are essential to increase compliance.

7.6 Health educational activities should be organised for parents - specially the mother, patients, their relatives and the general public. Broadcasting, educational programmes on radio, television, etc., use of pamphlets, brochures and posters, newspaper articles - these activities are to be conducted by doctors, nurses and other trained personnel.

7.7 Primary care physicians have a key position in the prevention and care of rheumatic heart disease because of the close contact with patients and their families. Their knowledge should be updated by workshops or seminars organised by teaching institutions.

The principles of rheumatic fever are often taught poorly in many medical schools. One reason is that the entire field of preventive medicine is often under-represented in the curriculum. This situation should be corrected mainly through the teaching of streptococcal microbiology in a clinical context by departments

1. The first part of the paper is devoted to a general discussion of the problem of the origin of life.

2. The second part is devoted to a detailed study of the various hypotheses advanced to explain the origin of life.

3. The third part is devoted to a study of the various factors which may have influenced the origin of life.

4. The fourth part is devoted to a study of the various theories advanced to explain the origin of life.

5. The fifth part is devoted to a study of the various theories advanced to explain the origin of life.

of pediatrics, cardiology and community medicine, school health services, etc. Nurses should also be motivated to play a significant role.

7.8 Role of auxilliary personnel should be (1) health education in acute rheumatic fever (2) secondary prophylaxis which consists of giving (1.2) million units of Benzathine penicillin for adults and 6 lakh units for children (3) Examination of 5 - 15 year olds with suggestive acute infections (4) search for contacts with symptoms.

7.9 Stress should be laid on the preventive aspects of rheumatic heart disease in the curriculum of preventive medicine in medical schools. It should include knowledge about the socio-cultural factors and preventive aspects and socio-economic consequences of life-long cardiac disability.

7.10 The ultimate aim should be to incorporate screening surveys into the routine school health examination system since the prime target consists of children aged between 5 and 16 years. The facilities used for prevention would mainly be those of the services of primary health care, school medicine and maternal and child health care. For screening, the facilities of hospital departments and the help of trained nurses would be necessary.

There should be a natural assessment of the risk involved, its financial toll and the effects on children.

Evaluation of programmes by periodic surveys, of random samples of school children is the best indicator which has to be followed.

Since student community i.e. age group 5 - 15 years, is most involved, surveillance to identify the epidemiological pattern in the community and to monitor streptococcal infection is important. Two or three surveys (which include clinical, bacteriological and serological examination) covering the principle seasons of the year are desirable. The surveillance should be the responsibility of the national rheumatic fever control programme. The criteria which are well documented for identification of the condition should be brought to the attention of parents, teachers and auxiliary health workers.

7.11 Laboratory facilities for both culture and serology should be available, but because these services are poor in developing countries, the clinical suspicion remains the main platform on which further action should be taken.

7.12 A school health registry should be maintained, the objective of which would be to characterise rheumatic fever and rheumatic heart disease cases, to determine the effectiveness of

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the present modalities of prophylaxis and to determine reasons for non-adherence to the prophylactic regimen.

A rheumatic fever registry is to be maintained for effective follow-up of rheumatic fever patients. This registry should:

- i) have a record of all rheumatic fever patients receiving continued prophylaxis,
- ii) maintain a list of patients due for prophylaxis each month,
- iii) should also contain a list of patients who should continue prophylaxis but failed to have their prescription filled.

The poverty-disease poverty circle should be attacked from both directions.

7.13 A national rheumatic fever/rheumatic heart disease control programme should be started.

1) The health authorities must be persuaded about the need for and feasibility of rheumatic fever control. For this, support of voluntary organisations, local opinion leaders and health professionals is necessary since rheumatic disease has serious consequences for the national health systems and social services existing. Community planning and social services have to take account of the high incidence of disabilities suffered by the patient. Assistance can be given to the patient in areas of

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Department of the Interior

Washington, D.C. 20540
Bureau of Land Management

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regarding the proposed action.

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transport, housing, ergonomics, sheltered workshops, supply of work rehabilitation or retraining.

Mobile physiotherapy units, occupational guidance and self-help devices will prove useful.

The assignment of appropriate priority to the control of rheumatic fever should originate not only from the understanding of epidemiology but also taken into account the socio-economic growth of developing countries and be considered within the concept of integration of health care activities in a multipurpose health care delivery system.

Finally, a fully established control programme should operate a central register for patients with rheumatic fever and rheumatic heart disease -

- (1) to promote cooperation between participating physicians, school health services, MCH centres, hospitals and laboratories.
- (2) to establish and maintain a system of regular secondary prophylaxis.
- (3) promote health education and keep health personnel at all levels informed about rheumatic fever and rheumatic heart disease in general and the programme in particular.

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1. The first part of the book is devoted to a general introduction to the subject of the book. It discusses the importance of the subject and the scope of the book. It also discusses the organization of the book and the notation used throughout.

2. The second part of the book is devoted to a detailed discussion of the subject. It discusses the various aspects of the subject and the methods used to study it.

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4. The fourth part of the book is devoted to a discussion of the future of the subject. It discusses the various ways in which the subject is likely to develop in the future.

5. The fifth part of the book is devoted to a discussion of the bibliography. It lists the various books and articles that have been written on the subject.

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REFERENCES

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REFERENCES

1. Agarwal B.L. : "A reappraisal of pattern of cardiovascular disorders in India"
Journal of Indian Medical Association, 1975, 65, 125-129.
2. Achutti A.C. : WHO chronicle No:34, Pg 338-1980.
3. Alain Ekne & Ann : "Rheumatic heart disease in Africa"
Edmund Bertrand
World Health Forum vol 13, 1992.
4. Anabavani G.M et al : Epidemiology of rheumatic heart disease among Primary school children in Western Kenya.
Int. J. Cardiology, 1989
5. Amigo MC. et al : Acute Rheumatic fever.
Rh. Dis. Clin. North Am. 1993 May; 19(2); 333-50
6. Al-Elisse YA : Acute rheumatic fever during childhood in Saudi Arabia.
Ann. Trop: Paediatrics 1991; II(3):225-31
7. Benakappe D.G.et al : "Review of 100 cases of rheumatic fever in children."
Indian Paediatrics Vol. XV No.5: Pg. 379-384
8. Bhattacharya's : The diagnosis of rheumatic fever-evolution of the Jones criteria.
Int. J. Cardiol 1986 Sept; 12 (3): 285-94.
9. Bland EF and Jones TD : "Rheumatic fever & rheumatic heart disease - A twenty-year report in 1000 patients followed since childhood."
British Medical Journal, circulation 4:836, 1957.

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3. The third part of the report is a detailed description of the data analysis process. It includes information about the statistical methods used to analyze the data and the results of the analysis. This section also discusses the limitations of the analysis.

4. The fourth part of the report is a discussion of the results of the study. It compares the results of the study to the objectives of the study and discusses the implications of the findings. This section also provides recommendations for future research.

5. The fifth part of the report is a conclusion. It summarizes the main findings of the study and provides a final statement about the significance of the results.

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10. British Medical Journal :
"Rheumatic heart disease in children".
Pg. 1039, 1960
11. Bertrand E. Gerard R :
Comparison of hospital prevalence of rheumatic heart disease and acute rheumatic arthiritis in France & America. Arch. Mal Coeur Vaiss 1993 Mar;86 (3): 291-5.
12. Bhawe SY Sane S et al :
Epidemiology of streptococcal infection with reference to rheumatic fever"
Indian Ped. 1991, Dec 28 (12) 1503-1508.
13. Breman RE and Patil MS :
"Acute rheumatic fever and rheumatic heart disease in a rural central Australian Aboriginal community".
Med. J. Aust. 1990 Sept. 17, 153(6); 335,338-9.
14. Coombs CF & Company, 1924 :
"Rheumatic heart disease, New York"
William Wood and Company 1924.
15. Chandra J & Ahmed SH :
Prasad's Social Classification of Indian Families: Updated"
Indian Ped. 1987 689-690
16. Chun LT, Reddy DV et al :
"Rheumatic fever in children and adolescents in Hawaii
Ped. 1987, Apr;79(4); 549-52
17. Co-operative Rheumatic :
fever study report
United Kingdom and United States:
Circulation. 11:343, 1955.
18. Denenholz EJ & Rambar AC :
Am.J Dis Child; 61: 1044, 1941.
19. Dondog N. :
WHO Chronicle No: 34, Pg 341, 1980.
20. Dodu & Bothig. S :
"Rheumatic fever and rheumatic heart disease in developing countries."
World Health Forum 1989, vol 10. No 2.

21. Elsse A.E et al :
Juvenile Mitral stenosis in Egypt
Paper presented at the Vith World Congress of Cardiology, London 1970
23. Eissenberg M.S :
"Rheumatic heart disease in Developing World - Prevalence, Prevention and Control."
European Heart Journal, 1993 Jan 14 (1): 122-8.
24. Eshel G, Barr J et al :
"Acute rheumatic fever in the young - changing prevalence and pattern"
European J Pediatr. 1988 Dec; 148 (3): 208-10.
25. Findlay L :
The rheumatic infection in childhood
Longmans Green and Co, Inc. New York 1931.
26. Fujikava S. :
Guidelines for the diagnosis of rheumatic fever - Jones criteria, Updated 1992.
Ryumachi 1993 Oct; 33 (5) : 451-5.
27. Feinstern A.R :
The clinical patterns of acute rheumatic fever and spagnuolo M fever:
Medicine, 41:279, 1962.
28. Gupta I, Gupta ML et al :
"Epidemiology of rheumatic and congenital heart disease in school children"
Journal Indian medical Association 1992. Mar 90 (3): 87-91
29. Griffiths SP, Gersony WM :
Acute Rheumatic Fever in New York City" 1969 - 1988: A Comparative Study of two Decades.
Journal of Pediatrics 1990. June, 116(6) 882-7.

30. Grover A Dhavan A et al :
Epidemiology of rheumatic fever and rheumatic heart disease in a rural community in Northern India.
Bulletin World Health Organisation 1993, 11(1):56-66
31. Gordis Leon :
Streptococcal Disease; in BK Maxcy Public Health and Preventive Medicine XIth Ed. 1980.
32. Ghosh S and Mangoth R :
"Acute Rheumatic heart disease in childhood.
Indian Pediatrics 1,2 - 6 1964
33. Harty D L et al :
"Hybridome antibodies against protective and non protective antigenic determinants of a structurally defined polypeptide fragment of streptococcal M Protein.
J. Exp. Med 55 : 1010, 1982.
34. Ibrahim Khalil et al :
"Epidemiological survey of Rheumatic fever and Rheumatic heart disease in Sahafa Town - Sudan".
Journal Epidemic Community Health 1992, Oct 46(5) 477-9.
35. ICMR (1981) :
"Standardised Analysis of Diagnostic and socio demographic on national level,"
Workshop held at PGI, Chandigarh on March 23-24 1981
36. Jones Dukett T :
The diagnosis of rheumatic fever.
J.A.M.A 1944, Vol 126 NO 8.
37. Keith J.D. et al :
Heart Disease in Infancy and Childhood
2nd Edition 1966 pg. 893-931.
38. Kassam AS & Zaheer SR :
An international comparison of the prevalence of streptococcal infection and rheumatic fever in childhood.
Pediatr. Ann 1992.Dec21(12): 835,839-42.

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Heart disease in infancy and...
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39. Kaul U Reddy RS et al :
Strategies for prevention and control of Rheumatic fever and Rheumatic heart diseases.
Indian J. Pediatr. 50 423-429, 1983.
40. Kawakita S :
Rheumatic fever and Rheumatic heart disease in Japan.
Jpn. Arch. J. 1986 Dec;50(12): 1241-5.
41. Koate :
WHO Chronicle No. 34 pg. 343-1980.
42. Lemson B et al :
Banangha School survey of Streptococcal Infections, Rheumatic fever and Rheumatic Heart Disease
Phillipine Journal of Cardiology 5:152, 1977.
43. Marcus RH, Sarli et al :
"The Spectrum of Severe Rheumatic mitral valve disease in developing country.
Ann. Intern. Med. 1994, Feb (1), 120(3): 177-83
44. Majeed HA Bhatnagar et al :
Acute Rheumatic fever and evolution of rheumatic heart disease a prospective 12 year follow up report.
Journal of Clinical epide. 1992 Aug. 45 (8):871-5.
45. Mathur KS :
Rheumatic Heart Diseases: Problems and Promises
J. Assoc. of Physicians of India, 9,24 373-82-1976.
46. Mundo RD et al :
Incidence of Rheumatic fever among children in Manila, 1958
Indian J. of Child Health, 7,809-1958.
47. Mackie TT :
An analytical study of three hundred and ninety three cases of Rheumatic fever and eighty nine cases of chorea
Amer. J. Med. Science 172: 199, 1926.

1. The purpose of this study is to determine the effect of the treatment on the response of the patients.

2. The study was conducted in a randomized, controlled, double-blind manner.

3. The results of the study are as follows:

4. The treatment group showed a significantly higher response rate than the control group.

5. The results of the study are consistent with the findings of previous studies.

6. The study was limited by the small sample size and the short duration of the treatment.

7. The results of the study suggest that the treatment is effective in improving the response of the patients.

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18. The results of the study are as follows:

48. Mayer FE Doyle EF et al : Declining severity of first attack of Rheumatic fever. American J.Dis. Child 105:146, 1963
49. Markowitz and Kutner : Rheumatic fever - Diagnostic Philadelphia, WB Saunders Company, USA 1965.
50. Majeed HA, Yousof AM et al : The natural history of acute Rheumatic fever in Kuwait. A prospective six year follow-up report. J. Chronic DIS 1986:39(5) 361-9
51. Massel, BF et al : Prevention of Rheumatic fever by prompt penicillin therapy of Hemolytic Streptococcal respiratory infections Progress report JAMA 166:1469,1951.
52. Moller JH, Kaplan EI : Forty years of Cardiac disease in children. Progress and problems first of 3 parts. Minn. Med. 1991 Sep;74(9) 27-33
53. Nair PM, Phillips E et al : The first attack of acute Rheumatic fever in childhood-clinical and laboratory profits. Indian Ped. 1990. March 27 (3):241-246.
54. Nelson WE : TB of Pediatrics 11th edition WB Saunders Co. Philadelphia (1979).
55. Ogunbi B. : Community control of rheumatic heart disease in Developing countries. WHO Chronicle 34:336-345 (1980)
56. Padmavati S : Rheumatic Fever and Rheumatic Heart Disease in developing countries. WHO Bulletin Vol.56 No.4 1978 543-550.

The following information was obtained from the records of the Department of the Interior, Bureau of Land Management, at Washington, D. C., on July 1, 1964.

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57. Padmavati S : Rheumatic Heart Diseases.
Swasth. Hind. March-April 1992
58. Padmavai S : The Cardiac Patients in under-
developed countries.
American heart Journal 58 (3)
411-424,1959.
59. Park JE : Text Book of Preventive and
Social Medicine
13th edition 1992.
60. Padmavati S : The Challenge of Rheumatic
fever in the 1980's
Ind. J. Pediatr. 49:387, 1981.
61. Pugno Vanoni MC et al : Rheumatic fever from 1960's to
1990.
Case records in 2 hospitals of
the Lombardian area. Pediatr.
Med. Chir 1992 Jul-Aug 14(4):
415-2
62. Roy SB : The diagnosis of Rheumatic
fever.
JIMA 35, 344 1960.
63. Roy SB et al : Juvenile Mitral Stenosis in
India.
Lancet 2:193,1963.
64. Rosenthal A Massel BF et al : Rheumatic fever under 3 years
of age. A report of 10 cases.
Pediatr. 41:612,1968.
65. Rgharagozloo : Community control of rheumatic
heart disease in developing
countries.
WHO Chronicle No.34:pg 340,
1980.
66. Strasser T Kotta J : The control of Rheumatic fever
and Rheumatic Heart disease.
An outline of WHO activities.
WHO Chronicle Vol.27 Feb 1973
67. Shrivastava S Tandon R : Management of Acute Rheumatic
fever.
Indian J Pediatr. 48:431-455
1981.

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11. The eleventh of these is the fact that the majority of the cases are of the mild type.

68. Strasser T et al :
Control of Rheumatic fever and Rheumatic heart disease
WHO chronicle 27, 49; 1973
69. Saxena MN :
Rheumatic fever and Rheumatic heart Diseases in Baroda Children.
Ped. Clinics of India 6,9,p.971
70. Strasser T :
Rheumatic fever and rheumatic heart disease in 1970's
Public Health Review 5:207; 234, 1976
71. Shreshtha UK, Pandey MR :
et al
Prevalence of Rheumatic fever and Rheumatic heart disease in School Children in a rural community of a hill region of Nepal.
Indian Heart Journal 1991 Jan-Feb 43(1):39-41.
72. Sanyal SK et al :
The intial attack of acute Rheumatic fever during childhood in North India.
Circulation 49:7-12 (1974).
73. Schlesinger B :
The relationship of throat infections to acute rheumatism in childhood.
Arch. Dis. Child. 5:411,1930.
74. Souza AR D'Souza EM et al :
Rheumatic heart disease among school children in Marmagoa.
The Clinican 44:384,1980.
75. Taranta et al :
The occurance of rheumatic like subcutaneous nodules without evidence of joint or heart disease.
Report of a case.
New England J.Med. 266 13,1962
76. Taranta A Markowitz M(ED) :
Rheumatic fever. A guide to its recognition, prevention and cure.
International Medicine Publishers, Boston USA 1981, pg. 77.

77. Tompheins et al : Longterm follow-up of rheumatic fever patients in intra muscular penicillin prophylaxis.
Circulation, 42 (suppl III), 105, 1970
78. Tewodros W and Muhe L et al : A one year study of streptococcal infections and their complications among Ethiopian children.
Epidemiol Infect 1992 Oct. 109 (2) 211-25.
79. Vaishnava S : Clinical study of 160 cases of rheumatic fever.
Indian Journal of child health 10,253, (96).
80. Vakil RJ : Heart disease in India.
AM Heart Journal, 48; 439,1954
81. Veasy LG, Tanu LY et al : Persistence of acute rheumatic fever in the intermountain area of the United States.
J. pediatr, 1994 Jan 124 (1) 9-16.
82. WHO Report : Rheumatic heart disease.
WHO Chronicle 34,9,1980
83. WHO Report : Prevention of rheumatic fever
WHO Technical Report series 342, 1966
84. WHO Report : Community prevention and control of cardiovascular disease
WHO Technical report series 732,1986.
85. WHO programme for prevention of rheumatic fever/rheumatic heart disease in 16 developing countries. Report from phase I (1986-90).
Bulletin World Health Organisations 1992; 70 (3) 213-85

1970-1971 - 1st year
1971-1972 - 2nd year

86. WHO Report :
The prevention in childhood and youth of adult cardiovascular disease time for action.
WHO Technical report series, 792.
87. WHO Report :
Rheumatic fever and rheumatic heart disease.
WHO Technical Report series, 1988.
88. Wilson MG et al :
Natural History of rheumatic heart disease in the 3rd, 4th, and 5th decades of life. I. Prognosis with special reference to Survivorship.

Circulation, 16:700 1957
89. Xuan Xuang Yao :
Community control of rheumatic heart disease in developing countries.
WHO chronicle 34 Pg 339 1980.
90. Walker KB Human DG et al :
The problem of compliance in rheumatic fever.
S. Afr. Med. J. 1987, Dec 5: 72 (11): 781-3

P R O F O R M A

The Prevalence of Rheumatic Heart Disease in a Rural Population
Catered by Rural Health cum Training Centre, Mandur and
Administration of the Secondary Prophylaxis.

Family Schedule:

Name of the patient _____ A/S/ _____
Village : _____ House No. _____
Father's name : _____ Mother's name : _____
Literacy states of Father _____ Literacy states of mother _____
Religion : _____ Hindu/Muslim/Christian/Others _____
Type of Family: Joint/Nuclear _____
Source of Income: _____ Father's income : _____
Mother's income : _____
Total income : _____
Social classification : I / II / III / IV / V
(Revised B.G. PRASAD'S classification)
Environmental Sanitation : Hygienic/Unhygienic _____
Locality of house: Kutcha/Semi-kutcha/Pucca _____
No. of living rooms: _____
Overcrowding: Present/Absent _____
Ventilation: Adequate/Inadequate _____
Water supply: Hard pump/Sanitary well/Open shallow well _____
Whether using Boiled/Chlorinated water _____
Excreta disposal Sanitary/Insanitary (Specify) _____
H/o any illness in the family. _____

SECRET

The following information is being furnished to you for your information and is not to be distributed outside your organization.

Reference is made to the report of the Committee on the subject of the above captioned matter.

The Committee has concluded that the information contained in the report is reliable and that the subject of the report is a person of interest.

The Committee has also concluded that the information contained in the report is of a nature which would be of interest to the public.

The Committee has therefore decided to release the information contained in the report to the public.

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II Individual Schedule: (Pertaining to RHD)

(a) Did you suffer from any one or more of the followings:

	Yes/No _____	
	Duration	R _x given
1. Dyspnoea/or Orthopnoea	_____	_____
2. Palpitations	_____	_____
3. Cyanosis	_____	_____
4. Cedema of feet	_____	_____
5. Chest pain	_____	_____
6. Recurrent sore throat	_____	_____
7. Recurrent infection (Respiratory)	_____	_____
8. Urinary tract infection	_____	_____
9. Dry cough	_____	_____
10. Any abnormal movements (Chorea)	_____	_____
11. Difficulty in swallowing	_____	_____
12. Hoarseness of voice	_____	_____

(c) Were the above symptoms followed by:

a) Fever : type (specify) _____

b) Pain & swelling & redness of knee/ankle or any other joint:

Yes/No _____

c) Did you ever cough blood: Yes/No _____

d) Were you receiving penicillin injections every month _____

e) Are you aware that sore throat can lead to heart disease

Yes/No _____

Physical Examination:

Ht in cm _____

Wt in kg _____

General Examination:

Pallor : present/absent _____

Throat congestion present/absent _____

Nails: Clubbing/cyanosis present/absent _____

Pulse: Rate/rhythm/volume/arterial wall _____

Temp: _____

Bp: _____

Rash: Present/absent (specify) _____

Swelling of feet: present/absent _____

Neck veins: present/absent _____

Apex beat Normal/abnormal _____

 site of apex beat _____

Heart sound Normal/abnormal _____

area _____

Murmur Specify type _____

character _____

RS: abnormal breath sounds _____

(crepts., rhonchi) _____

P/A: Liver: palpable/Non-palpable _____

Spleen: palpable/Non-palpable _____

Clinical diagnosis: _____

III Clinical Investigations:

Hb in gm % _____

ECG findings _____

ASO titre _____

C-Reactive Protein _____



